

Standard Operating Procedures for Processing with Cyanoacrylate Fuming

1 Scope

Cyanoacrylate fuming is used by Friction Ridge Discipline personnel to develop latent prints on non-porous and semi-porous items.

2 Limitations

The cyanoacrylate and aluminum weighing dish used in a specific chamber must be compatible to the dimensions or settings of that chamber.

3 Equipment/Materials/Reagents

Cyanoacrylate

CYANO-SHOT™

Lumicyano™

Aluminum weighing dish or similar container

Automated Cyanoacrylate Fuming Chamber(s) (Misonix®/Mystaire® and CAPTURE™ BT)

Cyanoacrylate fuming wand, cartridge(s), and butane

Cyanoacrylate Blowing Chamber(s)

Improvised cyanoacrylate fuming chamber(s)

Foster + Freeman SUPERfume® system

4 Procedures

4.1 Misonix®/Mystaire® Cyanoacrylate Fuming Chambers

Personnel will complete the following steps in order:

1. Place item(s) into chamber, ensuring adequate spacing surrounding item(s) for exposure. |

2. Prior to beginning the humidity cycle, ensure the humidifier water tank has sufficient water for the cycle.
3. Begin the humidity cycle, which transitions to the fuming cycle once the set humidity value is reached (optimal 70% relative humidity).
4. At the start of the fuming cycle, weigh an appropriate amount of cyanoacrylate into an aluminum dish or similar container.
 - a. Only the cyanoacrylate designated for that chamber can be used (see limitations).
5. When the set temperature value for the hot plate is reached, place cyanoacrylate container on the hot plate and press enter to resume the fuming cycle.
6. Upon completion of the fuming cycle, the chamber will purge fumes for a preset time. When the purge cycle is complete, remove the item(s) and check chamber to ensure no items have been left behind.
7. Examine the item(s) visually and/or under a forensic light source for latent prints (Refer to FBI Friction Ridge Discipline Processing Manual, Standard Operating Procedures for Processing with Forensic Light Sources).
8. The case record will reflect the specific chamber used for each cycle.

4.2 Labconco CAPture™ BT Fuming Chambers

Personnel will complete the following steps in order:

1. Place item(s) into chamber, ensuring adequate spacing surrounding item for exposure.
2. Prior to beginning the cycle, ensure the appropriate program is selected and the humidifier contains a sufficient amount of water.
3. Weigh an appropriate amount of cyanoacrylate into an aluminum weighing dish, ensuring any tabs on the aluminum dish are not folded down.
 - a. Only the cyanoacrylate designated for that chamber may be used (see limitations).
4. Place the aluminum dish on the white circle behind the hot plate door and start the process.
5. Upon completion of the full process, remove the item(s) and check chamber to ensure no items have been left behind.
6. Examine the item(s) visually and/or under a forensic light source for latent prints (Refer to FBI Friction Ridge Discipline Processing Manual, Standard Operating Procedures for Processing with Forensic Light Sources).

7. The case record will reflect the specific chamber used for each cycle.

4.3 Additional Cyanoacrylate Fuming Methods (Non-automated)

a) To include the use of, but not limited to:

- Cyanoacrylate fuming wand(s).
- Cyanoacrylate Blowing Chamber.
- CYANO-SHOT™ (with or without Lumicyano™).
- Foster + Freeman SUPERfume® system.
- Improvised cyanoacrylate fuming chamber(s) (such as tents, non-automated cyanoacrylate fuming cabinets, and other non-manufactured chambers).

b) Test strip

- For handheld devices, such as a cyanoacrylate fuming wand, the test strip will be fumed prior to the fuming of any item(s).
- For improvised cyanoacrylate fuming chambers, the test strip will be included with the item(s).
- If the test strip is negative, the item(s) will be processed again (see FBI Friction Ridge Discipline Processing Manual, Preamble).
- Results of the test strip must be recorded for each cycle in the case record.

c) Processing

- Personnel will process the item(s), following the manufacturer's recommendations, if applicable, until sufficient development occurs.
- The method of processing must be recorded in the case record.
- For digital capture and photography, see FBI Friction Ridge Discipline Processing Manual Preamble.

4.4 Storage

Original cyanoacrylate containers.

4.5 Shelf Life

Cyanoacrylate has an indefinite shelf life provided the reagent checks are satisfactory.

5 Standards and Controls

See FBI Friction Ridge Discipline Processing Manual, Preamble.

6 Safety

See FBI Laboratory Safety Manual for appropriate information.

7 Calculations

Not applicable.

8 Measurement Uncertainty

Not applicable.

9 Sampling

Not applicable.

10 References

FBI Laboratory Safety Manual, Federal Bureau of Investigation, Laboratory Division. Latest Revision.

FBI Friction Ridge Discipline Processing Manual, Preamble, Federal Bureau of Investigation, Laboratory Division. Latest Revision.

Lewis, L. A., Smithwick, R. W., Devault, G. L., Bolinger, B., and Lewis, S. A. "Processes involved in the Development of Latent Fingerprints using the Cyanoacrylate Fuming Method". JFI. 46(2):241.

McLaren, C., Lennard, C., & Stoilovic, M. Methylamine pretreatment of dry latent fingerprints on polyethylene for enhanced detection by cyanoacrylate fuming. JFI.60(2):199-222.

Poudel, K. Testing the Effectiveness of Lumicyano with "Cyanoshot" Components when RAM Use is limited or restricted: A Novel HEAT Solution, PowerPoint. Quantico, VA: FBI (Publication Pending), 2019.

Trozzi, T. A., Schwartz, R. L., and Hollars, M. L. *Processing Guide for Developing Latent Prints*, FBI Laboratory, Washington DC, 2001.

Rev. #	Issue Date	History
2	04/17/20	Replace Latent Print Units with Friction Ridge Discipline. Minor spelling, grammar and wording updates. Used “item” in place of specimens and other terms in document. Remove latent print in title and modified Scope. Reorganized Sections in document for easier flow and renamed to match Laboratory requirements as needed. Section 2, clarified limitations. Section 3, limited list to primary chemicals and equipment, eliminated peripherals, and added CYANO-SHOT™ and Lumicyano. Section 4, streamlined instructions. Section 4.3, added third bullet. Section 10, updated.
3	12/01/20	Minor wording changes throughout and changed evidence to item. Section 4.1 and Section 4.2, added requirement to record specific chamber used. Section 4.1, removed sentence “a”. Section 4.3, removed redundancy.

Approval

Redacted - Signatures on File

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Date: 11/30/2020

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Date: 11/30/2020

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Date: 11/30/2020

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